REMARKS/ARGUMENTS

Reconsideration of the above-identified application respectfully requested.

Claim Amendments

The amendment to page 1 provides the patent number of a parent application. The amendment to the claim 2 corrects an inadvertent dependency, which, then, provides proper antecedent basis for a term, which otherwise, was without proper antecedent basis.

Claim 1 is amended to expressly recite the exfoliated nanoclay, which currently is indirectly recited. Also, the data provided for Nanomer PGV (100% Montmorillonite) in the application shows efficacy without pre-treatment with an onium compound. See also p. 8, ll. 1-7. Claim 1 has been amended consistent with these data and new claim 41 added with such deleted limitation. Also, the intercalated clay loading step has been specified to occur "in the substantial absence of aqueous and organic solvent" based on the teachings of the working examples in the above-identified patent application at page 14, ll. 5-6, which procedure was used in all of the examples. No new matter is added by virtue of these claim amendments.

Claims 8, 13, 16, 21-38 stand withdrawn from further consideration. Applicants do not understand why claim 8 is withdrawn inasmuch as it was designated to be included in the Group I claims elected by Applicants. Moreover, claim 8 is dependent from claim 1 under examination, so that it should be rejoined with the claims under examination. Withdrawn claims 16 and 21-38 are cancelled in order to materially advance prosecution.

The Rejection of the Claims

Claims 1, 5-7, 9-12, 14, 15, 17, and 18 stand rejected under the provisions of 35 U.S.C. § 103(a) as being obvious over Ohno (U.S. Patent No. 5,876,738) in view of Beall (U.S. Patent No. 5,730,996). Claims 2-4, 19, and 20 are objected to. While not expressly stated, in view of the lack of an art rejection, Applicants assume that these claims are deemed allowable if rewritten in independent form to include all limitations including all intervening claims. New claim 39 is claim 2 and new claim 40 is claim 4. Their immediate allowance respectfully requested.

Applicants respectfully traverse the rejection of the claims and grounds therefor.

The Ohno Citation

Ohno proposes an antifungal phyllosilicate, where the antifungal compound may be made from an ammonium phosphate-type material, as in formulas 1 and 2 at the bottom of col.

5. Ohno does not use an intercalated clay, as do Applicants. Moreover, Ohno expressly teaches the use of solvents, for example, water and ethanol (see col. 3, ll. 30-41; col. 34, ll. 12-21) in forming his antifungal phyllosilicate. Applicants load its intercalated clay in the substantial absence of aqueous and organic solvent. Finally, Ohno's clay particles have "an average particle diameter of no more than 10 μm, preferably 0.1 to 7 μm, and more preferably having a narrow and uniform particle size distribution." (Ohno @ col. 3, ll. 13-15).

Initially, Applicants wonder why an antifungal patent is cited in view of:

> As an additional requirement, the Examiner has requested for search purposes Applicants to select a given polymer, a type of claim, a given control agent, and a given target species. Responsive to this requirement, Applicants select: polyurethanes (claim 14), montmorillonite (claim 9), bifenthrin (claim 15), and ants (claim 17).
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> Response filed February 6, 2006.

As such, Ohno's teachings fail to show any polyurethane, bifenthrin, or ants. As such, how can it be cited against?

The Beall Citation

Beall, which is discussed in the above-identified application at p. 8, ll. 17-24, proposes organic pesticide intercalates, which like Ohno, rely on solvent for formation. See, for example, Ohno's Example commencing at col. 29, which relies on water dispersions (see, ll. 32-33, 42-43, *etc.*). Moreover, Beall reports that:

> Example 1 and FIGS. **13** and **14** show that 23% trifluralin was intercalated into the clay. Attempts to intercalate trifluralin into a quaternary ammonium-treated clay failed in Examples 2 and 3.
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> Beall @ col. 31, ll. 8-11 (emphasis supplied).

Interestingly, this is exactly the opposite of results reported by Applicants.

With respect to Applicants' process, Applicants "procedures do not use water or organic solvents" (application @ p. 14, line 5), as reported in the working examples. In fact, Applicants also exclude some polymers that would act as a solvent during the formation of the loaded intercalated clays. For completeness, some clays may contain some bound water that is not removed in the intercalation/drying process, as discussed above. This water does not count as a solvent, because it is so tightly held in the polar regions of the nanoclay. Ammonium compounds too may contain bound water that also does not act as a solvent.

When loading is done with solutions of active ingredient, the percentage of active ingredient in the loaded product is less, and it is released more rapidly. The solvents include water, small-molecule chemicals polymers, and monomers. A reason that these extra chemicals lead to poorer results is believed to be that solvents compete with the active ingredient for sites in the nanoclay structure.

Applicants' processing in the absence of solvents is directly contrary to the teachings of both Ohno and Beall. In fact, with such solvents, Beall reports the failure of ammonium intercalated clays. Such teachings underscore and prove patentability of the claims under examination.

Moreover, Applicant's nanoclays have particles size ranges and aspect ratios, as stated in the application:

> The length and breadth of colloidal particles have all three dimensions within the size range of about 0.5 nanometers to about 3000 nanometers. Exfoliated Nanocor I.30 E (see Examples), for example, is far from spherical. It has a thickness of about 1 nanometer and other dimensions of about 1500 nanometers. It is a miniature "flatland". Broadly, then, colloidal particles for present purposes will range in size from about 20 microns to less than 1 nanometer. These dimensions result in extremely high average aspect ratios of around 200–500. For example, clays having an aspect ratio greater than about 50, thickness less than about 10 nanometers, and other dimensions greater than about 0.5 microns, find use in the present invention. An aspect ratio, then of the loaded nanoclays will range from between about 10:1 to about 1500: 1 with a thin (narrowest) dimension of between about 0.1 nm and about 10 nm.
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> Application @ p. 7, ll. 22-33).

This should be contrasted with Ohno, which teaches "an average particle diameter of no more than 10 μm" (*supra*) compared to Applicants' largest particle size of 3000 nanometers (micro being 10^{-3} and nano being 10^{-6}). Applicants' particles, then, are much smaller in size than are Ohno's particles.

In view of the amendments and remarks submitted herewith, allowance of the claims and passage to issue of this application respectfully requested.

Respectfully submitted,

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